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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/077,975	02/20/2002	Toshio Ohba	0171-0822P	5028

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EXAMINER	
HERRING, LISA L	

ART UNIT	PAPER NUMBER
1731	

DATE MAILED: 08/11/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

AS

Office Action Summary	Application No.	Applicant(s)	
	10/077,975	OHBA ET AL.	
	Examiner	Art Unit	
	Lisa Herring	1731	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *20 February 2002*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-12* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,3-12* is/are rejected.

7)☒ Claim(s) *2* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *20 February 2002* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *2/2/02 and 8/5/02*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Drawings

1. The drawings are objected to because there are two "x" axes in Figure 2. The "x axis" in the direction of the electric field should be labeled "y" instead of "x". Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to

be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claims 1 and 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wilson (U.S. 2,989,633) in view of Robinson (U.S. 2,729,748).

Wilson discloses an electron beam apparatus comprising electro-magnetic focusing coils (30) to irradiate a filamentary material (26) that passes continuously through the openings of a chamber (17). Wilson discloses the apparatus can continuously irradiate polymeric or resinous surface coatings in order to cure the coating on indefinite length materials. Wilson fails to specifically disclose optical fibers as being coated, but it is considered that it would have been obvious to one skilled in the art at the time the invention was made that the apparatus of Wilson could coat any indefinite length material such as optical fibers with the reasonable expectation of producing an optical fiber with a cured coating. Wilson teaches the pressure in the irradiation chamber (17) is higher than the electron beam generating chamber (11) and that the pressure in the irradiating chamber (17) is not critical for radiation efficiency (Column 2, lines 43-54). Therefore, the pressure in the irradiating chamber could be at substantially atmospheric pressure. Wilson does not teach details on how to apply the magnetic field to the electron beam to improve the efficiency of the electron irradiation. However, Robinson details in Column 5, lines 13-62 the affects of the magnetic field on an electron beam irradiation apparatus, and how to move the beam on the product to be irradiated.

Accordingly, it would be obvious to one of ordinary skill in the art at the time the invention was made to combine the electron beam coating apparatus disclosed by Wilson with the detailed teachings of Robinson for the advantage of improving the efficiency of electron irradiation of coatings.

Regarding Claim 5, in Column 2, lines 1-4, Wilson teaches substantial economies in the cost and operation of applying a beam of electrons generated at relatively low voltages of less than about 500 kV. Also, Wilson discloses in Column 2, lines 21-25, his apparatus has an electron beam generated with power supplied by a transformer for stepping up the voltage to the order of 50 to 100 kV.

Accordingly, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use voltages less than 500 kV, in particular 50-100 kV as taught by Wilson for the advantage of minimizing cost of operation.

4. Claims 3 and 4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wilson (2,989,633) in view of Robinson (2,729,748) for the reasons discussed in the rejection applied to Claim 1 above, and further in view of Nygard (2,887,584). Neither Wilson nor Robinson directly teaches the use of an inert gas in the zone where product is irradiated. Nygard discloses an irradiation apparatus where product is irradiated through an electron beam (3) upon a conveyor belt (5) within a hood (6) that is hermetically sealed to the lower extremity (1) of the electron accelerator, and an inert gas, such as helium, argon, etc., is introduced under the hood (6) through a conduit (7). Nygard teaches in Column 2, lines 23-26, by filling the space between the electron window (2) and

the product (4) with a gas of low atomic number, such as helium minimizes electron scattering.

Accordingly, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use an inert gas such as helium, nitrogen, argon, etc., as taught by Nygard, in the Wilson apparatus for the advantage of minimizing electron scattering during the irradiation process.

5. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Wilson (2,989,633) in view of Robinson (2,729,748) for the reasons discussed in the rejection applied to Claim 1 above, and further in view of Chawla (6,214,899).

Wilson fails to disclose any information about the resinous or polymeric resins that can be irradiated in the apparatus. However, Chawla discloses a radiation-curable fiber optic coating material, which includes coatings comprising polyether urethane acrylate oligomers and reactive diluents having reduced moisture content for improved shelf-life and fiber adhesion.

Accordingly, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use one of the radiation-curable optical fiber coatings, as disclosed by Chawla, in the irradiation apparatus, as disclosed by Wilson, for the advantage of applying optical fiber coating materials with improved shelf-life and adhesion in the manufacturing process.

6. Claims 7, 8, and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wilson (U.S. 2,989,633) in view of Robinson (U.S. 2,729,748).

Wilson discloses an electron beam apparatus comprising electro-magnetic focusing coils (30) to irradiate a filamentary material (26) that passes

continuously through the openings of a chamber (17). Wilson discloses the apparatus can continuously irradiate polymeric or resinous surface coatings in order to cure the coating on indefinite length materials. Wilson fails to specifically disclose optical fibers as being coated, but it is considered that it would have been obvious to one skilled in the art at the time the invention was made that the apparatus of Wilson could coat any indefinite length material such as optical fibers with the reasonable expectation of producing an optical fiber with a cured coating. Wilson teaches the pressure in the irradiation chamber (17) is higher than the electron beam generating chamber (11) and that the pressure in the irradiating chamber (17) is not critical for radiation efficiency (Column 2, lines 43-54). Therefore, the pressure in the irradiating chamber could be at substantially atmospheric pressure. Wilson does not teach details on how to apply the magnetic field so that the electron beams pass across the electric field to two-dimensionally converge the electron beam on the product to be irradiated and Wilson does not teach the magnetic field applied has a direction parallel to the path of the optical fiber, and the electric field has a direction perpendicular to the path of the optical fiber.

However, Robinson discloses in Fig. 12, Column 11, lines 65-75, and Column 12, lines 1-3 the application of a magnetic field (58) and electric field (57) to converge the electron beam (59). Robinson, Figure 12, also illustrates the magnetic field and electric field are perpendicular to each other and it can be inferred by the electron beam pattern the product could move either parallel to

the path of the magnetic field or parallel to the electric field to obtain the benefit of the convergence of the beam.

Accordingly, it would be obvious to one of ordinary skill in the art at the time the invention was made to combine the electron beam coating apparatus, as disclosed by Wilson with the teachings of converging the electron beam, as disclosed by Robinson for the advantage of improving the efficiency of irradiation through the focusing the electron beam on the product to be irradiated.

7. Claims 9 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wilson (2,989,633) in view of Robinson (2,729,748) for the reasons discussed in the rejection applied to Claim 7 above, and further in view of Nygard (2,887,584). Neither Wilson nor Robinson directly teaches the use of an inert gas in the zone where product is irradiated. Nygard discloses an irradiation apparatus where product is irradiated through an electron beam (3) upon a conveyor belt (5) within a hood (6) that is hermetically sealed to the lower extremity (1) of the electron accelerator, and an inert gas, such as helium, argon, etc., is introduced under the hood (6) through a conduit (7). Nygard teaches in Column 2, lines 23-26, by filling the space between the electron window (2) and the product (4) with a gas of low atomic number, such as helium minimizes electron scattering.

Accordingly, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use an inert gas such as helium, nitrogen, argon, etc., as taught by Nygard, in a Wilson type coating apparatus with

improved beam focusing, as taught by Robinson, for the advantage of minimizing electron scattering during irradiation process.

Regarding Claim 11, in Column 2, lines 1-4, Wilson teaches substantial economies in the cost and operation of applying a beam of electrons generated at relatively low voltages of less than about 500 kV. Also, Wilson discloses in Column 2, lines 21-25, his apparatus has an electron beam generated with power supplied by a transformer for stepping up the voltage to the order of 50 to 100 kV.

Accordingly, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use voltages less than 500 kV, in particular 50-100 kV as taught by Wilson for the advantage of minimizing cost of operation.

8. Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Wilson (2,989,633) in view of Robinson (2,729,748) for the reasons discussed in the rejection applied to Claim 7 above, and further in view of Chawla (6,214,899).

Wilson fails to disclose any information about the resinous or polymeric resins that can be irradiated in the apparatus. However, Chawla discloses a radiation-curable fiber optic coating material, which includes coatings comprising polyether urethane acrylate oligomers and reactive diluents having reduced moisture content for improved shelf-life and fiber adhesion.

Accordingly, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use one of the radiation-curable optical fiber coatings, as disclosed by Chawla, in the irradiation apparatus, as disclosed

by Wilson, for the advantage of applying optical fiber coating materials with improved shelf-life and adhesion in the manufacturing process.

Allowable Subject Matter

9. Claim 2 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

10. The following is a statement of reasons for the indication of allowable subject matter: the magnetic field flux density of at least 0.1 T in Claim 2 is not explicitly stated in the prior art.

Conclusion

11. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Petisce (5,812,725) discloses using electron beam irradiation for pre-treatment of the fiber for improved adhesion. This device is illustrated as being capable of being placed in different locations on a fiber coating apparatus. Petisce (5,000,772) discloses using a magnetic field to improve coating cure while drawing and coating an optical fiber. Magnetic field strengths applied in the process are also disclosed. The following patents disclose using a polyether urethane acrylate and reactive diluents for coating optical fibers: Szum et al. (6,534,557), Fabian (6,553,169), Fewkes et al. (6,602,601), and Winningham (6,563,996). Krongauz et al. (6,265,476) discloses information on radiation-curable materials using either ultraviolet radiation or electron beam radiation.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lisa Herring whose telephone number is 571-272-1094. The examiner can normally be reached on Mon-Fri. 7am-4pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Steven Griffin can be reached on 571-272-1189. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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